

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An etching solution having an etch rate of 2 Å/minute or greater for a film having a relative dielectric constant of 8 or higher (a High-k film), and whose ratio of the etch rate for a thermal oxide (THOX) film to the etch rate for a High-k film ([THOX etch rate]/[High-k film etch rate]) is 50 or less,

which contains hydrogen fluoride (HF), an ether compound and optionally water,

wherein the ratio of HF: the ether compound: water is 3 mass% or greater: 50 to 97 mass% : 10 mass% or less,

wherein the ether compound is at least one member selected from the group consisting of:

compounds represented by General Formula (1),

$R_1-O-(CH_2CH_2-O)_n-R_2$ (1),

wherein n is 1, 2, 3 or 4, R_1 and R_2 may be the same or different and each represents a hydrogen atom, a lower alkyl group or a lower alkyl carbonyl group, with the proviso that R_1 and R_2 are not both hydrogen atoms,

propylene glycol monomethyl ether,

propylene glycol monopropyl ether, and

propylene glycol monobutyl ether.

2. (original): An etching solution according to Claim 1, wherein the High-k film has a relative dielectric constant of 15 or greater.

3. (original): An etching solution according to Claim 1, wherein the High-k film is a hafnium oxide film, a zirconium oxide film, or a lanthanum oxide film.

4. (original): An etching solution according to Claim 1, wherein the High-k film comprises at least one member selected from the group consisting of hafnium silicate (HfSiO_x), hafnium aluminate (HfAlO), HfSiON , HfAlON , ZrSiO , ZrAlO , ZrSiON , ZrAlON , alumina (Al_2O_3), HfON , ZrON and Pr_2O_3 .

5. (original): An etching solution according to Claim 1, wherein the etch rate for the thermal oxide (THOX) film is 100 Å/minute or less.

Claims 6-11 (canceled).

12. (currently amended): An etching solution according to ~~Claim 10~~ Claim 1, wherein the ether compound has a relative dielectric constant of 30 or less.

13. (currently amended): An etching solution according to ~~Claim 8~~ Claim 1, wherein the ~~organic solvent comprising a heteroatom~~ ether compound contains at least one carbonyl group in its molecular structure.

14. (currently amended): An etching solution according to ~~Claim 8~~ Claim 1, wherein the ~~organic solvent comprising a heteroatom~~ ether compound has at least one hydroxy group in its molecular structure.

15. (currently amended): An etching solution according to ~~Claim 10~~ Claim 1, wherein the ether compound is at least one member selected from the group consisting of ~~tetrahydrofuran, tetrahydropyran, furan, furfural, γ -butyrolactone, monoglyme, diglyme, and dioxane~~ monoglyme and diglyme.

16. (currently amended): An etching solution according to ~~Claim 10~~ Claim 1, wherein the ether compound is at least one member selected from the group consisting of ethylene glycol methyl ethyl ether, ethylene glycol diethyl ether, diethylene glycol methyl ethyl ether, diethylene glycol diethyl ether, triethylene glycol dimethyl ether, triethylene glycol diethyl ether, triethylene glycol ethylmethyl ether, tetraethylene glycol dimethyl ether, tetraethylene glycol diethyl ether, and polyethylene glycol dimethyl ether.

17. (currently amended): An etching solution according to ~~Claim 10~~ Claim 1, wherein the ether compound is at least one member selected from the group consisting of ethylene glycol monomethyl ether acetate, ethylene glycol monoethyl ether acetate, ethylene glycol monobutyl ether acetate, diethylene glycol monomethyl ether acetate, diethylene glycol monoethyl ether acetate, diethylene glycol monobutyl ether acetate, triethylene glycol monomethyl ether acetate and triethylene glycol monoethyl ether acetate.

18. (currently amended): An etching solution according to ~~Claim 10~~ Claim 1, wherein the ether compound is at least one member selected from the group consisting of an ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, polyethylene glycol monomethyl ether, ethylene glycol monoisopropyl ether, and ethylene glycol monobutyl ether, ~~propylene glycol monomethyl ether, propylene glycol monopropyl ether and propylene glycol monobutyl ether.~~

Claims 19-20 (canceled).

21. (original): A method for producing an etched article using the etching solution of Claim 1, the method comprising a step of etching an object to be etched having a silicon oxide film and a film having a relative dielectric constant of 8 or greater, and a gate electrode that is formed on the film having a relative dielectric constant of 8 or greater.

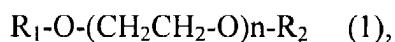
Claim 22 (canceled).

23. (new): A method for using an etching solution having an etch rate of 2 Å/minute or greater for a film having a relative dielectric constant of 8 or higher (a High-k film), and whose ratio of the etch rate for a thermal oxide (THOX) film to the etch rate for a High-k film ([THOX etch rate]/[High-k film etch rate]) is 50 or less,

the etching solution containing hydrogen fluoride (HF), an ether compound and optionally water,

wherein the ratio of HF: the ether compound: water is 3 mass% or greater : 50 to 97 mass% : 10 mass% or less;

wherein the ether compound is at least one member selected from the group consisting of; compounds represented by General Formula (1)



wherein n is 1, 2, 3 or 4, R₁ and R₂ may be the same or different and each represents a hydrogen atom, a lower alkyl group or a lower alkyl carbonyl group, with the proviso that R₁ and R₂ are not both hydrogen atoms,

propylene glycol monomethyl ether,

propylene glycol monopropyl ether and

propylene glycol monobutyl ether.